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ORIGINAL ARTICLE

Injuries in French and Chinese regular badminton players

Les blessures chez les joueurs réguliers de badminton français et chinois

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KEYWORDS
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Summary
Objective. — Epidemiological studies examined injuries in European and Asian badminton players but no study directly compared these 2 populations. Therefore, the objective of this study was to examine whether differences existed between French and Chinese regular badminton players (RBP) in terms of injury.
Methods. — An online questionnaire was completed by 113 French and 117 Chinese RBP. The two populations were matched for distribution of genders, ages, skill levels and badminton exposure. Chi-square tests (χ^2) were conducted to determine differences in injuries distribution between the two populations.
Results. — A higher percentage of French RBP reported to have experienced at least one injury over the 5 past years compared with Chinese RBP (66% vs. 45%, respectively, $\chi^2 = 10.3$, $P = 0.001$). For the upper limb, French players experienced more shoulder/arm injuries (59% vs. 32%, respectively, $P < 0.001$) whereas Chinese reported more wrist/hand injuries (44% vs. 12%, respectively, $P = 0.049$), suggesting differences in the employed playing techniques to perform the variety of badminton strokes. The vast majority of injuries were localized to the lower extremity both for French and Chinese (69% and 56%, respectively), with a higher prevalence for the ankle (33% and 49%, respectively), then the knee (19% and 27%, respectively).
Conclusions. — The most common injury reported was the ankle sprain, which generally occurred during a jump landing upon backward and lateral movements (60%) or during forward lunge (26%). As more than half of the ankle sprains were moderate or severe, a particular attention should be paid to the effects of footwear and court surface characteristics on the biomechanics of badminton players.
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MOTS CLÉS
Entorse de cheville ;
Blessure du genou ;
Questionnaire ;
Européen ;
Asiatique

Résumé
Objectif. — Les études épidémiologiques ont examiné les blessures chez les joueurs de badminton européens et asiatiques mais aucune étude n'a directement comparé ces 2 populations. Par conséquent, l'objectif de cette étude était d'examiner si des différences existaient entre les joueurs de badminton réguliers français et chinois en termes de blessure.
Méthode. — Un questionnaire en ligne a été complété par 113 français et 117 chinois pratiquant le badminton régulièrement. Les deux populations étaient équilibrées en termes de genre, âge, niveau d'expertise et nombre d'heures de pratique hebdomadaire du badminton. Des tests de Chi-deux (χ^2) ont été conduits pour déterminer les différences de répartition de blessures entre les 2 populations.
Résultats. — Un plus grand pourcentage de joueurs français ont reporté avoir eu au moins une blessure au cours des 5 dernières années par rapport aux joueurs chinois (66 % vs 45 %, respectivement, $\chi^2 = 10{,}3$, $p = 0{,}001$). Pour le membre supérieur, les joueurs français ont eu plus de blessures à l'épaule et au bras que les joueurs chinois (59 % vs 32 %, respectivement, $p < 0{,}001$) tandis que les joueurs chinois ont reporté plus de blessures au poignet et à la main (44 % vs 12 %, respectivement, $p = 0{,}049$), suggérant des différences de technique de jeu employée pour réaliser la variété des frappes au badminton. La grande majorité des blessures étaient localisées au niveau du membre inférieur à la fois pour les joueurs français et chinois (69 % et 56 %, respectivement), avec une plus grande prévalence pour la cheville (33 % et 49 %, respectivement), puis le genou (19 % et 27 %, respectivement).
Conclusions. — La blessure la plus répandue reportée était l'entorse de la cheville, qui survenait généralement au cours d'une réception de saut lors des mouvements latéraux et vers l'arrière (60 %) ou au cours des fentes vers l'avant (26 %). Comme plus de la moitié des entorses de cheville étaient modérées ou sévères, une attention particulière devrait être portée aux effets de la chaussure et des caractéristiques de la surface de jeu sur la biomécanique des joueurs de badminton.
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1. Introduction

Badminton is a popular racket sport, which is highly demanding to maintain a high level of intensity for as long as possible. Even though the injury incidence in elite and recreational players during training and competition is quite low compared with contact sports (2.3—7.1 injuries/1000 badminton hours), the large number of players worldwide lead to a non-negligible amount of badminton-related injuries recorded each year [1]. Badminton players perform multiple types of shots, such as the smash, the clear, the drop, the net shot and the drive [2]. These shots require rapid arm movements that place large loads on the upper extremity joints and that may lead to shoulder, elbow and wrist injuries [3]. Furthermore, badminton players have to perform quick changes of direction, lateral and backwards movements and lunges towards the net to hit the shuttlecock in good conditions. Therefore, the repeated impacts generate an accumulation of stress in the internal structures of the lower limb, leading to a predominance of overuse injuries [4—6]. Nevertheless, due to the rapidity of the game and the intensity of movements, badminton players are also at risk to sustain acute injuries, such as Achilles tendon rupture, ankle sprain and anterior cruciate ligament injury [7—9].

Epidemiological studies highlighted that gender, age and skill level may have an influence on the risk and type of injuries [10—12]. Age was suggested to be a risk factor for badminton injuries as higher incidence rate were observed in older badminton players [13,14]. Gender would not influence the incidence rate but may affect the type of injuries, with a higher frequency of women seeking medical consultation for anterior cruciate ligament injury or shoulder pain compared to men [1,7,15]. Jørgensen and Winge (1987) [16] observed a higher injury incidence in recreational players as compared with elite players, although the difference was quite low (3.1 vs. 2.8 injuries/1000 h) and that no statistical analysis was done.

Badminton is practiced worldwide by more than 200 millions of players of all levels [17]. It is the national sport of several Asian countries and it is much practiced in the northern and western Europe as well [2]. Many differences were observed between Asian and European players. For example, in terms of anthropometry, international players from the European population were shown to be taller and heavier compared with Asian population (mean 1.80 m, 74 kg vs. 1.67 m, 60 kg, respectively) [2]. Some differences may also exist between these population in terms of other intrinsic factors such as the playing technique or the playing style (offensive/defensive) and extrinsic factors such as playing surfaces or material (footwear, racket...). To our knowledge, no study compared European and Asian badminton playing techniques or styles but some substantial differences

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